

Am I getting the best price?

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With the help of the internet, consumers can easily search to find the lowest possible price of a good from a variety of retailers. This has led to online retail sales growing at a faster annual rate (16 percent) than offline retail sales (3 percent). Have you ever wondered if the online price is better than the offline price? In a recent working paper, [“The pricing strategies of online grocery retailers”](#) (*National Bureau of Economic Research*, Working Paper 28639, April 2021), authors Diego Aparicio, Zachary Metzman, and Roberto Rigobon explain the differences between uniform pricing and algorithmic pricing and investigate how online grocery stores set prices depending on certain variables.

Uniform pricing is a strategy in which a retail chain sets a good to a single price at all its stores in a specific area. For example, the price of dog shampoo is set and sold at one price at any location from the same retail chain within a geographic area. Alternatively, algorithmic pricing is a strategy that allows a computer to change the price of a good multiple times a day to optimize profits based on a set of variables that the algorithm learns over time. For example, after learning how consumers are purchasing gasoline throughout the day, a gas station owner or manager would lower prices when the station is not busy and increase prices during rush hour. Aparicio and colleagues study these two pricing strategies to compare price differentiation between grocery firms.

To compare these two pricing strategies, the authors gathered price data multiple times a day across locations and compared prices within a retailer (online versus offline prices) and across retailers (online and offline prices). The authors discovered that a retailer changed and varied its online prices more often than the prices of its competitor and the retailer also was less likely than its competitor to match its offline prices to its online prices. However, the authors found that the share of private label products of an online grocery store had the same price 90 percent of the time. The authors believe the difference between prices was because of price stickiness and that a retailer controls the price of its own manufactured products. Of the two largest online grocery stores, which account for almost 50 percent of all online grocery sales, the authors found that each changed (either increased or decreased) the price of any particular product that same day about 7 percent and 8 percent of the time. And as time passes, the chance of a monthly price change increases to about 74 percent and 50 percent for the largest and second largest online grocery stores, respectively. This finding clearly indicates an algorithmic pricing strategy.

The authors also investigated how shipping costs could affect online prices. They found that as the delivery distance increases, the price that the online shopper sees also increases. A 10-mile increase in shipping distance would add a 0.14-percentage-point increase to the price of a product from the same retailer. Local demographics (home values, annual income per capita, etc.) play an even smaller part and only moderately influence local prices.

In conclusion, a takeaway from the authors' research is that online prices of a grocery store are often changing more rapidly than its offline prices. The retailers' own products are less likely to have a price change and are more likely to stay consistently at one price. Delivery distance matters and can add to the cost of a product, and local demographic information is less relevant to how a grocery store prices its product.